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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the **** controlling device of the yard electronic branch exchange which provides the system cordless service in a place of business, and semi-public roaming service using the same cordless moving machine.

[0002]

[Description of the Prior Art]Conventionally, the switchboard which used together the system cordless service in a place of business and semi- public roaming service is known as a yard electronic branch exchange. Here, the service to which the system cordless service in a place of business carries out the extension telephone call in a place of business and a line wire call with a cordless telephone is said. Semi- public roaming service means the service which makes possible mobile communications (for example, communication by personal handy phone etc.) using the equipment for the system cordless service in a place of business.

[0003]When it is presupposed that these two kinds of services can be used with the same cordless moving machine, the cordless moving machine to apply will have two kinds of telephone numbers. That is, when using an extension number when using the system cordless service in a place of business, and using semi- public roaming service, PS number (telephone number for mobile communications) is used.

[0004]

[Problem(s) to be Solved by the Invention]Drawing 5 is a block diagram showing notionally the composition of the system which used the conventional yard electronic branch exchange.

[0005]As shown in the figure, the general telephone line 502 and the telephone line 503 for mobile communications are connected to the yard electronic branch exchange 501 as a communication line for performing communication with place of business outside. This yard electronic branch exchange 501 is connected also to two or more base stations 504 and 504

and ... And radio is performed between each base stations 504 and 504, ..., each cordless moving machines 505 and 505 and ...

[0006]In such a system, the **** management in the case of performing an extension telephone call in two sets of the cordless moving machines 505 (namely, during the conversation / un-busy management), The yard electronic branch exchange 501 has recognized the extension number of an origination side and a destination side from logic information (numbering item information acquired from the cordless moving machine 505 of the origination side and wearing number information), and was carrying out by setting the extension equivalent to these extension numbers as a busy state.

[0007]The **** management in the case of performing outside line communication using the general telephone line 502, In the logic information which was acquired from the cordless moving machine 505 in dispatch, and reception, it was carrying out by setting the extension which was acquired from the telephone line 502 grade and which wears, recognizes the extension number of an origination side or a receiver from number information etc., and is equivalent to this extension number as a busy state.

[0008]On the other hand, in the communication using the telephone line 503 for mobile communications, By connecting via the PHS interface unit (not shown) in the yard electronic branch exchange 501, the base station 504 and the telephone line 503 which the physical information (information showing the base station which is communicating with the cordless moving machine 505) acquired from the cordless moving machine 505 shows, The completely same communication as the usual mobile communications is performed. That is, only PS number is used and the case which the cordless moving machine 505 sends where a message is case and received does not have the numbering item information as an extension number, or that wear and the yard electronic branch exchange 501 acquires number information.

[0009]Therefore, **** management in this case is not performed by only being carried out by the entrepreneur of mobile communications, and being depending on the yard electronic branch exchange 501.

[0010]For this reason, when dispatch is performed to the cordless moving machine 505 using semi- public roaming service from other cordless moving machines 505 or the communication terminal outside a place of business, Only the time of using semi- public roaming service can judge during the conversation / non-during the conversation one (namely, when it sends using PS number), When the system cordless service in a place of business was used, it was not able to judge during the conversation / non-during the conversation one (namely, when it sends using an extension number).

[0011]

[Means for Solving the Problem]This invention relates to a **** controlling device of a yard electronic branch exchange which provides for the same cordless moving machine system

cordless service in a place of business which used the 1st telephone number, and semi- public roaming service which used the 2nd telephone number.

[0012]And a terminal state management memory which makes during the conversation / un-busy information in system cordless service in a place of business correspond to the 1st telephone number, and memorizes it, When a cordless moving machine starts a telephone call by semi- public roaming service, The 2nd telephone number is acquired from a communication line or a cordless moving machine for semi- public roaming services, and it changes into the 1st telephone number, and has the terminal state Management Department which rewrites memory information on a terminal state management memory so that during the conversation / un-busy information corresponding to this 1st telephone number may be in a busy state.

[0013]Since according to such composition the 2nd telephone number is transformed into the 1st telephone number and **** management is performed, even when it sends using system cordless service in a place of business, it can judge during the conversation / non-during the conversation one to semi- public roaming service.

[0014]

[Embodiment of the Invention]Hereafter, this embodiment of the invention is described using a drawing. Please understand that the numerical condition which has only shown roughly the size of each constituent, shape, and the arrangement relationship among the figure to such an extent that they can understand this invention, and is explained below is only mere illustration.

[0015]Drawing 1 is a block diagram showing roughly the important section composition of the **** controlling device 100 concerning this invention. This **** controlling device 100 is formed in the yard electronic branch exchange 501 in the same system as the conventional case (refer to drawing 5).

[0016]In the figure, the signal analyzer 101 inputs origination information or incoming information from the communication line 503 or the cordless moving machine 505 (refer to drawing 5) for semi- public roaming services. And this signal is analyzed and a kind, PS number, etc. of service are recognized.

[0017]The terminal state Management Department 102 inputs the PS number P from the signal analyzer 101. And as it mentions later, after changing PS number into an extension number using the number conversion memory 103, an extension number is changed into terminal information using the terminal information memory 104, and the memory information on a terminal state management memory is rewritten further.

[0018]The number conversion memory 103 has memorized the table (it is described as the following "conversion table") showing the correspondence relation between the PS number P and the extension number X, for example as binary data. The example of 1 composition of this conversion table is notionally shown in drawing 2. In the figure, each PS number P_0, \dots, P_n , and these PS number P_0, \dots , extension number X_0 corresponding to P_n, \dots and X_n are

memorized as binary data. These are stored sequentially from what has a small value of PS number. namely, -- in drawing 2 -- $P_0 < \dots < P_m < \dots$ it is $< P_n$.

[0019]The terminal information memory 104 has memorized the correspondence relation between the extension number X and the terminal information I as binary data. Here, terminal information is information which shows the identification number attached every cordless moving machine 505. Since the composition same as an internal configuration of this terminal information memory 104 as what is being used with the conventional system cordless service in a place of business is employable, explanation is omitted.

[0020]The terminal state management memory 105 memorizes the correspondence relation between the terminal information C, and during the conversation / un-busy information. Here, during the conversation / un-busy information is information which shows whether it is that each cordless moving machine 505 is talking over the telephone (busy state). Since the internal configuration of this terminal state management memory 105 can also adopt the same composition as what is being used with the conventional system cordless service in a place of business, it omits explanation.

[0021]Next, operation of the **** controlling device 100 shown in drawing 1 is explained using drawing 3 and drawing 4.

[0022]Drawing 3 is an outline flowchart at the time of performing dispatch from the cordless moving machine 505.

[0023]In this case, the signal analyzer 101 receives the origination information of the cordless moving machine 505 first (S301).

[0024]Next, this signal analyzer 101 extracts PS number information element (information including a kind, PS number, etc. of service) from above-mentioned origination information. and the service which this cordless moving machine 505 is demanding based on this PS number information element is system cordless service in a place of business -- or it is judged whether it is semi- public roaming service (S302).

[0025]Here, when the service which the cordless moving machine 505 is demanding is system cordless service in a place of business, the signal analyzer 101 ends operation. Other formation parts (not shown) in the **** controlling device 100 provide the system cordless service in a place of business for the cordless moving machine 505 to apply as usual in this case.

[0026]On the other hand, when the service which the cordless moving machine 505 is demanding is semi- public roaming service, the signal analyzer 101 extracts the PS number P from PS number information element, and transmits it to the terminal state Management Department 102 (S303).

[0027]And the terminal state Management Department 102 changes this PS number into an extension number using the number conversion memory 103 (S304). In this conversion, first,

the terminal state Management Department 102 reads P_m which is a value of the center of PS number P_0, \dots, P_n from the conversion table (refer to drawing 2) memorized by the number conversion memory 103, and compares with the PS number P inputted from the signal analyzer 101. And from a conversion table, in $P_m > P$, it is begun to read PS number P_{m-1}, P_{m-2} , and ... in the direction to which a value becomes small one by one, and it looks for the PS number P and a match. On the other hand, in $P_m < P$, from a conversion table, a value begins to read each PS number P_{m+1}, P_{m+2} , and ... one by one in the direction which becomes large, and the PS number P and a match are looked for. And if the value which is in agreement with P is read, the extension number corresponding to this read-out value will be read from a conversion table.

[0028]Next, the terminal state Management Department 102 reads the terminal information corresponding to this extension number from the terminal information memory 104 (S305).

[0029]And the terminal state Management Department 102 rewrites during the conversation / un-busy information on the terminal state management memory 105. That is, the data in which a busy state is shown is stored in the storage area corresponding to this terminal information (S306).

[0030]By this, when other users use the system cordless service in a place of business (namely, when it sends using an extension number), When other formation parts (not shown) in the **** controlling device 100 read during the conversation / un-busy information in the terminal state management memory 105, it can judge during the conversation / non-during the conversation one.

[0031]At the time of the end of a telephone call, the terminal state Management Department 102 should just decide to rewrite during the conversation / un-busy information on the terminal state management memory 105 to a non-busy state.

[0032]Drawing 4 is an outline flowchart when the cordless moving machine 505 receives a message using semi- public roaming service in the moving terminal outside a place of business.

[0033]In this case, the signal analyzer 101 receives the incoming information with which the PHS interface unit (not shown) provided in the yard electronic branch exchange 501 was first provided from the telephone line 503 (S401).

[0034]Next, like the case of drawing 3, this signal analyzer 101 extracts PS number information element from above-mentioned incoming information, extracts the PS number P from PS number information element further, and sends to the terminal state Management Department 102 (S402).

[0035]And the terminal state Management Department 102 changes this PS number into an

extension number using the number conversion memory 103 (S403). This conversion can be performed like the case (S304 reference) of drawing 3.

[0036]Then, like the case (S305,306 reference) of drawing 3, the terminal state Management Department 102 reads the terminal information corresponding to this extension number from the terminal information memory 104 (S404), and rewrites during the conversation / un-busy information on the terminal state management memory 105 busy further (S405).

[0037]Thereby, when other users use the system cordless service in a place of business, and other formation parts (not shown) in the **** controlling device 100 read during the conversation / un-busy information in the terminal state management memory 105, it can judge during the conversation / non-during the conversation one.

[0038]At the time of the end of a telephone call, the terminal state Management Department 102 should just decide to rewrite during the conversation / un-busy information on the terminal state management memory 105 to a non-busy state.

[0039]Thus, according to the **** controlling device of the yard electronic branch exchange concerning this embodiment. Even when dispatch by the system cordless service in a place of business is performed to the cordless moving machine 505 which is performing mobile communications (semi- public roaming service is used) from other cordless moving machines 505 or the communication terminal outside a place of business, it can judge during the conversation / non-during the conversation one.

[0040]In this embodiment, as an important section of the **** controlling device 100, When there was dispatch by the system cordless service in a place of business to the cordless moving machine 505 which is using semi- public roaming service, only the composition for recognizing that an addresser is a busy state was shown, but. It is also possible to obtain the **** controlling device for recognizing that an addresser is a busy state when there is dispatch by public roaming service to the cordless moving machine 505 which is using the system cordless service in a place of business by almost same composition. However, in this case, it is necessary to constitute the number conversion memory 103 so that an extension number may be changed into PS number.

[0041]

[Effect of the Invention]As explained to details above, when there is dispatch by the system cordless service in a place of business to the cordless moving machine which is using semi-public roaming service according to this invention, It becomes possible to make the addresser by this system cordless service in a place of business recognize that this cordless moving machine is a busy state.

[Translation done.]